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Abstracts - D 138264, 3 Jan 55

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Dissertation defended for the degree of Candidate of Economic Sciences at the Institute of World Economics and International Relations

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Vestnik Akad. Nauk, No. 4, 1963, pp 119-145

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[Insurance monopolies and their role in the economy and politics of Great Britain] Strakhovye monopolii i ikh rol' v ekonomike i politike Anglii. Moskva, Izd-vo Akad. nauk SSSR, 1963. 287 p. (MIRA 16:7)

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ZAMENA TSVETNYKH METALLOV V DETALYAKH STROITEL'NYKH I DOROZHNYKH MASHIN DREVESNYMI I TEKSTIL'NYMI PLASTIKAMI page 143

SO: Collection of Annotations of Scientific Research Work on Construction, completed in 1950, Moscow, 1951

SOV/137-58-12-25354

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 181 (USSR)

AUTHORS: Moroz, L. S., Khesin, Yu. D., Mingin, T. E., Chernetsov, V. I.

TITLE: The Strength of Titanium (Prochnost' titana)

PERIODICAL: V sb.: Metallurgiya. Moscow-Leningrad, AN SSSR, 1957, pp 172-193

ABSTRACT: An investigation was made of the effect of low temperatures, rate and length of loading time, notching, and other external factors on the modulus of rupture of industrial Ti smelted in an electric-arc vacuum furnace. The authors discovered a sharp difference in sensitivity to notching (SN) in metals of separate smeltings which was determined by the ratio between the specific deformation work of impact stretching of smooth specimens and the a_k of notched Mesnager-type specimens. Ti which has a high SN is also sensitive to the state of the surface in notched specimens. The maximum H content of ~ 0.007 - 0.008% with which Ti retains a tolerable SN, but this figure may vary depending upon O and N content. The intensity of the effect of H on the a_k is determined by the size and type of TiH precipitation which depends upon the cooling rate from the temperature of > 400°C. Static

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The Strength of Titanium

bending tests of notched specimens showed that the magnitude of the bending deflection and the deformation work up to the appearance of the first crack, as well as the work of propagation of the crack through the entire section of the specimen at room temperature, are less in Ti than in SKhL-4 steel. In dynamic testing Ti with 0.0007% H exhibits no cold-brittleness whatever, but when affected by impurities, in particular by H, it becomes cold-brittle. An increase in H content to 0.0125% decreases ψ by 75% at -196°C. The authors advance a hypothesis to explain the physical nature of H-brittleness of Ti by the low S_{ot} of favorably oriented hydride inclusions. It was discovered that the strain rate has no effect on the ductility of smooth specimens of Ti enriched with H.

G. T.

Card 2/2

Khesin, Yu. D.

18(7) PHASE I BOOK EXPLOITATION SOV/1838

Metallovedeniye; sbornik statey, [vyp.] 2 (Study of Metals; Collection of Articles, [Nr] 2) [Leningrad] Sudpromgiz, 1958. 265 p. 4,000 copies printed.

Resp. Ed.: G.I. Kogytin, Candidate of Technical Sciences; Ed.: Ye. A. Krugova; Tech. Ed.: L.M. Volchok.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This is the second volume of collected scientific papers dealing with various problems in physical metallurgy, particularly in mechanical metallurgy and metallography. Topics covered include hydrogen embrittlement, intragranular distribution of elements in alloys, effect of tempering on carbon redistribution, use of tritium to investigate certain phenomena in metals, effect of certain alloying elements on temper brittleness and hardenability of steel, strength of notched specimens of brittle steel, effect of strain hardening on the properties of an aluminum alloy, etc. The articles are concerned mainly with various types of steel, though some deal with nonferrous alloys.

Card 1/25

Khesin, Yu. D., Engineer, and S.M. Shul'kin, Candidate of Technical Sciences. Plastic Deformation and Heat Treatment of Some Two-phase Alloys of Titanium 251

Author's conclusions (in part). The main reason for beta brittleness in two-phase alloys of titanium is the exceptionally rapid grain growth in the transition from the $\alpha + \beta$ range to the β range. The heterogeneous distribution of beta-stabilizing elements and impurities (O_2 and N_2) between the grain and the boundary zones leads to the preferred separation of the alpha phase along the grain boundaries, which considerably intensifies the development of beta brittleness. (2) Complete elimination of beta brittleness requires (a) terminating plastic deformation in the $\alpha + \beta$ range, at the same time assuring a deformation of not less than 30% in the two-phase region, and (b) carrying-out heat treatment in the $\alpha + \beta$ range. Such treatment hinders the preferred separation of the alpha phase along the grain boundaries and results in a fine-grained structure. (3) Quantitative x-ray analysis of the content of phases in quench-hardened specimens of AT-T5 alloy showed that for maximum strength the ratio of the alpha to the beta phase must be 1:4. A further increase in the beta-phase content merely causes a drop in plasticity without any noticeable gain in strength.

AVAILABLE: Library of Congress

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KHESIN, YU. D.

24(6) PHASE I BOOK EXPLOITATION SOV/2385

Akademiya nauk SSSR

Nekotoryye problemy prochnosti tverdogo tela; sbornik statey (Some Problems in the Strength of Solids; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 386 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V. I. Aver'yanov; Tech. Ed.: R. S. Pevzner; Editorial Board: A.F. Ioffe, Academician; G. V. Kurdyumov, Academician; S. N. Zhurkov, Corresponding Member, USSR Academy of Sciences; B. P. Konstantinov, Corresponding Member, USSR Academy of Sciences; F. F. Vitman, Doctor of Physical and Mathematical Sciences, Professor (Resp. Ed.); L. A. Glikman, Doctor of Technical Sciences, Professor; N. A. Zlatin, Doctor of Physical and Mathematical Sciences; V. A. Stepanov, Doctor of Technical Sciences; Ya.B. Fridman, Doctor of Technical Sciences, Professor; B. S. Ioffe, Candidate of Technical Sciences (Deputy Resp. Ed.).

PURPOSE: This book is intended for construction engineers, technologists, physicists and other persons interested in the strength of materials.

COVERAGE: This collection of articles was compiled by the Otdeleniye fiziko-matematicheskikh nauk AN SSSR (Department of Physical and Mathematical Sciences) and the Fiziko-tekhnicheskiy institut AN SSSR (Institute of Applied Physics, Academy of Sciences, USSR) in commemoration of the 80th birthday of Nikolay Nikolayevich Davidenkov, Member of the Ukranian Academy of Sciences, founder and head of the Otdel prochnosti materialov (Department of the Strength of Materials) at the Institute of Applied Physics, Academy of Sciences, USSR, founder of the Fakul'tet fizicheskogo metallovedeniya (Department of Physical Metallurgy) at the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute), recipient of the Stalin Prize (1943), the Order of the Red Banner of Labor (1945) and the Order of Lenin (1953). The articles deal with the strength of materials, phenomena of imperfect elasticity, temper brittleness, hydrogen embrittlement, cold brittleness, influence of deformation speed on the mechanical properties of materials, fatigue of metals, and general problems of the strength, plasticity, and mechanical properties of nonmetals. Numerous personalities are mentioned in the introductory profile of Professor Davidenkov. References are given at the end of each article.

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KHESIN, Yu.D., inzh.; SHUL'KIN, S.M., kand.tekhn.nauk

Plastic and heat treatment of certain binary titanium alloys.
Metallovedenie 2:251-265 '58. (MIRA 13:9)
(Titanium alloys--Metallography)

KHESIN, YU. D.

PHASE I BOOK EXPLOITATION SOV/3752

Metallovedeniye; sbornik statey, No. 3 (Physical Metallurgy; Collection of Articles, No. 3), Leningrad, Sudpromgiz, 1959. 390 p. 3,200 copies printed.

Ed.: G. L. Kagyrin, Candidate of Technical Sciences; Literary and Tech. Ed.: N. I. Buromenko.

PURPOSE: This collection of articles is intended for scientific personnel at research and educational institutions and industrial plants and also for advanced students.

COVERAGE: The articles report the results of investigations of 1) the effect of various factors on the susceptibility of constructional and heat-resistant steels and titanium alloys to brittle failure at various temperatures under various conditions of loading (long-time, short-time, cyclic, noncyclic) 2) alloying, structure, and condition of alloys as related to their mechanical properties, and 3) corrosion resistance and evaluation of stainless and heat-resistant steels. The articles are accompanied by numerous Soviet and non-Soviet references. No personalities are mentioned.

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AUTHORS: Moroz, L.S., and Khesin, Yu.D. (Leningrad)

TITLE: Investigation of the Mechanism of Hydrogen Embrittlement of Titanium and its Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, Nr 1, pp 111-122 (USSR)

ABSTRACT: The object of the present investigation was to study the effect of hydrogen on the mechanical properties of α-Ti and titanium alloys of the β and α+β type (the constitution diagram of the Ti-H system is reproduced in Fig 1; wt-%, top scale, at-%, bottom scale). The experimental materials comprised: technical purity Ti (U.T.S. = 55 kg/mm^2 at room temperature); a two-phase, Ti-base alloy containing 2% Mn, 1.3% Fe, 0.8% Cr, 1.2% Mo and 1.2% V; a two-phase, Ti-base alloy containing 5% Al, 3% Mo and 3% V; and a β-alloy, containing 15% Mo. After hot working, all these alloys were finely-crystalline with the average grain size of 0.04 to 0.07 mm; after a vacuum treatment (15 h at 700°C) their hydrogen content was less than 0.003%. Two methods were used to introduce hydrogen into the test pieces that were to be employed in the subsequent tests: the

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Investigation of the Mechanism of Hydrogen Embrittlement of Titanium and its Alloys

the heading of the table). The effect of hydrogen on the mechanical properties of the technical purity titanium, annealed at 650 °C, is illustrated by data given in Table 2 under the following headings: H_2 content, wt-%; σ_s (yield point, kg/mm2); ψ (reduction of area, %); a_k (impact strength, kg/mm2). It will be seen that whereas neither the yield point nor ductility (as indicated by ψ) of the specimens were affected by increasing hydrogen concentration, the impact strength, determined on notched bars, failed catastrophically. This effect is a direct consequence of the nature of the Ti-H constitution diagram (Fig 1). Solubility of H in α-Ti varies from 0.18 at 300 °C to 0.002 wt-% at 100 °C; after slow cooling from temperatures above 300 °C, hydrogen is present in titanium in the form of fully precipitated titanium hydride platelets (see the photomicrograph, Fig 2); when titanium, containing less than 0.18 wt-% H_2, is heated to 300 °C, hydrides dissociate completely and a solid solution of H in Ti is formed. On quenching from this or a higher temperature, a super-saturated, precipitation-hardenable,

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solid solution will be obtained. Thus, a titanium specimen with 0.03% H, quenched from 500 °C, had an impact strength of 7 kgm/cm^2; after ageing at 200 °C its impact strength decreased to 1 kgm/cm^2. Similar results could be obtained by prolonged room temperature ageing; this is illustrated by data, given in Table 3, which shows values of a_k of the H-bearing Ti specimen after quenching from 500 °C, and after 1, 10 and 100 days ageing at room temperature. Electron-microscope study of the ageing process confirmed the hypothesis that, in this case, embrittlement during ageing is associated with the precipitation and coalescence of titanium hydrides; this is illustrated clearly by the photomicrographs (X 2350) reproduced in Fig 3 (a - the microstructure of an H-bearing, Ti specimen in the quenched condition, b - the same microsection after 7 days' ageing at room temperature) which show the increased proportion of the hydrides as well as the grain-boundary broadening in the aged material. Regarding the mechanism of the embrittling,

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effect of hydrides, the authors base their considerations on the experimental data reproduced in Tables 4 and 5. The effect of the rate of deformation on ductility of annealed, H-bearing, α-Ti is illustrated in Table 4, which shows: H_2 content, wt-%; elongation (δ, %) and reduction of area (ψ, %) for specimens, tested at the rates of strain of: (I) 2 mm/min, and (II) 2.10^5 mm/min. The effect of the test temperature on the ductility of the same material is illustrated in Table 5, showing: H_2 content, wt-%, δ, and ψ determined at +20, -20 and -60 °C; (the specimen with 0.03% H tested at -60 °C failed in a brittle manner). It can be inferred from data given in Tables 2, 4 and 5 that brittleness due to hydrogen is not revealed by standard tensile tests, conducted on cylindrical specimens, and only becomes evident in the presence of a notch, at high rates of strain, or at low temperatures. These facts can be interpreted in one way only: titanium hydrides, while possessing some ductility, have low resistance to rupture; if the normal tensile stress in titanium is lower than the rupture strength of

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the hydrides, the effect of hydrogen will not become apparent; if the normal stress is raised above that critical value (by introduction of a notch, increasing the strain rate, or lowering the temperature), cracks are formed in the hydrides which reduce the strength of the metal to a level depending on the proportion of hydride platelets present and on their size, since these factors determine the number and dimensions of the cracks. This is illustrated by data reproduced in Fig 4, where the true tensile strength (S_K, kg/mm^2) of H-bearing titanium at -196 °C is plotted against the quantity and dimensions of the precipitated hydrides, points a, б, в and г relating to: (a) specimen quenched from 500 °C (low hydride concentration); (б) specimen quenched and aged for 2 h at 100 °C (medium concentration of hydrides of small size); (в) specimen annealed at 400 °C (high concentration of coarse hydride particles). The propagation of cracks in hydrogen-embrittled titanium is assisted by the internal tensile stresses, present at the

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edges of the hydride platelets owing to their higher (in comparison with Ti) specific volume. Oxygen, nitrogen, and carbon additions increase the sensitivity of titanium to hydrogen embrittlement, since they promote propagation of cracks; the effect of aluminium is beneficial since this metal increases solubility of hydrogen in titanium. The effect of hydrogen on the mechanical properties of a β-type, 15% Mo-Ti alloy was studied next. The results are reproduced in Table 5, showing: condition of the alloy (degassed; hydrogen-impregnated by electrolytic treatment - 3 h at 0.2 amp/cm^2); U.T.S. (σ_B, kg/mm^2); yield point (σ_S, kg/mm^2); δ, %; ψ, %. It will be seen that none of the investigated properties were affected by the presence of hydrogen. The results of experiments on specimens with higher content of hydrogen (introduced by high-temperature diffusion), quenched from 750 °C, are given in Fig 5, where ψ of specimens tested at the rates of strain of 2 and 200 mm/min (crosses and circles, respectively) is plotted against the hydrogen content (%).

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It will be seen that as long as hydrogen is in the solution, it does not affect the ductility of the β-phase; precipitation of hydrides in the β-phase causes the metal to fail in a brittle manner, this effect being attributed to notch-sensitivity of the β-phase. The hydrogen embrittlement of the α+β alloys is next discussed. Two alloys of this type, containing 20 and 50% of the β-phase, were investigated. Their mechanical properties (σ_S, δ, and ψ), are given in Table 7, the figures in the first and second sub-columns for each property relating to the hydrogen-free specimens and to specimens subjected to 24 h electrolytic hydrogenization treatment. It will be seen that, whereas the yield point was not affected by the presence of hydrogen, the ductility of the alloy (δ, ψ) decreased sharply. It was observed, also, that fracture of the hydrogen-bearing specimens started at the surface, the first cracks appearing already in the elastic deformation range (see Fig 6). The effect of the

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Investigation of the Mechanics of Hydrogen Embrittlement of Titanium and its Alloys

variation of the content of hydrogen, introduced by high-temperature diffusion, is illustrated by data given in Table 8 under the following headings: H_2 content, wt-%; ψ, %, of the alloy containing 20 and 50% of the β-phase. (A specimen of the alloy, containing 20% of the β-phase and 0.1% H_2, failed in the brittle manner). These results showed that the embrittling effect of hydrogen was more pronounced in the alloy with a lower content of the β-phase. The effect of the deformation rate is illustrated in Figs 7 and 8. In Fig 7a, ψ is plotted against the rate of strain (V, mm/min) for an alloy containing 20% of the β-phase, curves 1 and 2 relating to specimens before and after the electrolytic hydrogenization treatment, respectively; the corresponding curves for the alloy containing 50% of the β-phase are plotted in Fig 7b. In Fig 8a, ψ is plotted against V for the alloy containing 50% of the β-phase, curves 1, 2 and 3 relating to specimens with 0.025, 0.050 and 0.1% of hydrogen (introduced by high-temperature diffusion

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treatment) respectively; the corresponding curves (1 and 3) for the alloy containing 20% of the β-phase are plotted in Fig 8b. In this case, too, the proportion of the β-phase determined the behaviour of the alloys. The ductility of specimens containing hydrogen, introduced electrolytically, increased with increasing V, approaching the ductility of hydrogen-free material at V = 200 mm/min, this restoration of ductility with increasing V being less pronounced in the alloy with 50% of the β-phase. In the case of specimens containing hydrogen introduced by the high-temperature diffusion treatment, the restoration of ductility with increasing V was slow in specimens containing 50% of the β-phase, and did not occur at all in specimens containing 20% of the β-phase and 0.1% H_2. The effect of the constitution on the sensitivity of the α+β alloys to hydrogen embrittlement was revealed also by the results of impact strength tests, conducted on notched, cylindrical specimens 8 mm diameter (depth of

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the notch 1 mm, root radius 0.55 mm). The results of these tests are given in Table 9, showing: H_2 content, wt-%; a_k, kgm/cm^2, of specimens containing 20 and 50% of the β-phase. However, it is pointed out that tensile test at slow rates of strain is a more sensitive method of revealing the hydrogen embrittlement of titanium alloys of the α+β type. The difference in the behaviour of material containing hydrogen, introduced by different techniques, is attributed to the fact that hydrogen introduced electrolytically (i.e. at room temperature) can dissolve in the β-phase only. This was checked by X-ray diffraction analysis, carried out on a complex, Mn-bearing alloy, whose alloying elements, however, did not affect the solubility of hydrogen. The results are given in Table 10 under the following headings: constitution of the alloy (relative proportion of the α- and β-phase); lattice parameters of the α- and β-phases in the degassed alloy; lattice parameters of the α- and β-phases in the alloy with

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electrolytically introduced hydrogen. When hydrogen is introduced by the high-temperature diffusion treatment and the alloy is subsequently heated to the quenching temperature, re-distribution of hydrogen (i.e. its diffusion into the β-phase) takes place, until the partial pressure of hydrogen in both phases becomes equal. In the case under consideration, the re-distribution of hydrogen between the two phases is caused by the fact that at a given temperature, the equilibrium partial pressure of hydrogen, dissolved in the α-phase, is higher than that of hydrogen dissolved in the β-phase. This is illustrated by the diagram, reproduced in Fig 9, where the equilibrium partial pressure (P, mm Hg) is plotted against temperature (°C) for an alloy containing 2 at-% H_2. The non-uniform distribution of hydrogen in a two-phase alloy can be arrested by quenching. However, for a given hydrogen content in the specimen, its concentration in the β-phase will not be constant (as in the case of specimens with electrolytically introduced hydrogen), but

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will increase with decreasing proportion of the β-phase in the alloy. In addition, owing to solubility of hydrogen in the α-phase decreasing with falling temperature, the formation of hydrides may occur in this phase. Since solubility of hydrogen in titanium can be increased by alloying, the alloy used in the next series of experiments, in addition to 3% Mo and 3% V (elements stabilizing the β-phase), contained 5% aluminium which considerably increases solubility of hydrogen in the α-phase. The results are given in Table 11, showing: H_2 content, wt-%; δ, and ψ for specimens tested at the rate of strain of (I) 2 mm/min and (II) 200 mm/min. It will be seen that the presence of aluminium considerably decreased the proneness of the alloy to hydrogen embrittlement. The results of mechanical tests, conducted on specimens of the same alloy containing electrolytically introduced hydrogen, are given in Table 12, showing: condition of the specimen (treated electrolytically at I = 0.2 amp/cm^2 for 1.5 h, top line, and at I = 0.25 amp/cm^2 for 3.0 h, bottom line); ψ of

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specimens tested at the rate of strain of 2 mm/min (I) and 250 m/min (II). In this case, the beneficial effect of aluminium was also apparent. Analysis of the results of the present investigation, correlated with the findings of other workers, led the present authors to several conclusions. (1) The sensitivity of single-phase titanium to hydrogen embrittlement is determined by two factors: (a) room temperature solubility of hydrogen in the given phase which determines the "safe" and "dangerous" range of hydrogen concentration; (b) ease with which the cracks, caused by the presence of hydrides, are propagated throughout the alloy; this characteristic depends on the magnitude of the work of deformation done in propagating the cracks in titanium. The "safe" hydrogen concentration in the β-phase is one thousand times higher than that in the α-phase. On the other hand, cracks are propagated more easily in the β-phase, the α-phase being less notch-sensitive and showing no tendency to cold shortness. It is precisely owing to the

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ease of propagation of cracks in the β-phase that the fully brittle condition was observed in the β-alloy immediately after the appearance of the first hydride precipitates (see Fig 5), whereas in the case of specimens with the hydrogen content below the saturation point, increasing the hydrogen content had practically no effect on the mechanical properties of the alloy. (2) The hypothesis that hydrogen embrittlement of the two-phase titanium alloys can be attributed to the effect of hydrogen on each of the phases separately, has not been confirmed by the results of the present investigation. It is more likely that in the case of two-phase alloys, it is the interphase boundaries (absent in single-phase alloys) which constitute the geometrical locus of hydrogen embrittlement. Since hydrogen embrittlement in titanium alloys is directly associated with the presence of hydrides, and since microscopic examination of alloys, whose ductility depends on the rate of deformation, has revealed no hydrides, it has to be assumed that hydrides are precipitated in these alloys at

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AUTHORS: Moroz, L.S., Khesin, Yu.D.

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TITLE: Anomalous Growth of Metal Grains in Vacuo

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 2, pp 306-307 (USSR)

ABSTRACT: The authors made a special investigation of the influence exerted by the annealing of various metals in vacuo on the growth of their grains. This was done for the following reasons: In the investigation of the particular behavior of metals at high temperatures in vacuo they found a new phenomenon, namely, a faster growth of the grains than during annealing in normal air. In annealing deformed titanium in vacuo ($1 \cdot 10^{-4}$ torr) at temperatures above 800° this grain growth becomes clearly noticeable. The following materials were used for these investigations: technically pure titanium, Armco iron, M1-type copper. A fine-grained structure of these materials was obtained by deformation and annealing (grain size after annealing: 30 to 50μ). The annealed samples of all metals were mechanically treated and afterwards cut into two halves. One half of each sample was treated in vacuo, the other half in air in usual furnaces. Figure 2 shows microphotographs of the samples after annealing in vacuo and air (for iron, copper, and titanium). The grain size of all metals investigated was considerably larger after annealing in vacuo than after annealing in air. The higher the temperature of annealing the

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more distinct is this difference. Figure 4 shows the photographs of titanium macrostructure which were taken from sections of the samples. The sample annealed in vacuo had a coarse structure all over the cross section, the sample annealed in air was fine-grained. Armco iron samples gave analogous results. In the following one of the possible explanations of the anomalous growth of metal grains in vacuo is given: Various impurities having a higher vapor pressure than the metallic solvent are removed intensely during vacuum annealing. Experiments made by J.C. Chaston (Ref 2) concerning the growth of silver grains are considered to be very interesting in this respect. In heating deformed technically pure silver in air the grain grows only in the center of the sample, whereas in the outer layers (where oxygen could diffuse into silver) a very fine grain could develop. For a precise determination of the influence exerted by the impurities removed from the metal on the growth of the grain, titanium-[1] and Armco iron[8] samples were annealed at 1200° in vacuo for five hours, subjected to cold deformation (50%) afterwards, and then annealed at 650°. After mechanical surface treatment these samples were cut into two pieces one of which was annealed in vacuo, the other in air. Temperature and duration of the second annealing process in vacuo were considerably less than the

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first time. In this case the grain size of the samples annealed in vacuo and in air did not show any difference. Finally, an argument for the decisive influence of impurities on the growth of grains is given. There are 4 figures and 8 references, 1 of which is Soviet.

PRESENTED: October 20, 1959, by G.V. Kurdyumov, Academician

SUBMITTED: October 15, 1959

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S/126/62/013/006/011/018
E021/E192

AUTHORS: Moroz, L.S., Khesin, Yu.D., and Marinets, T.K.

TITLE: Study of creep and long-term strength of iron at low temperatures

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.6, 1962, 912-919

TEXT: The main investigations were carried out on Armco iron containing 0.1% C, 0.034% N, 0.18% O_2 and 0.06% Cu. The samples were tested after annealing at 930 °C. The deformation during creep was measured with an accuracy of 4×10^{-5} cm. The test temperatures were obtained using mixtures of dry ice in kerosene (-40 °C) and in benzene (-75 °C). With a stress of 34 kg/mm^2, creep occurred at -40 and -75 °C and on the steady-state part of the curve the rate was 10^{-2} to 10^{-3} %/hour. At room temperature there was no steady-state creep at this stress. It is proposed that the reason for the absence of creep effects at 18 °C is due to the influence of deformation ageing of iron. The energy of activation of the process of creep fracture for low temperatures and for a stress of 39 kg/mm^2 was found to be 13.5 kcal/mol.,

Card 1/2

MOROZ, L.S.; KHESIN, Yu.D.; MARINETS, T.K.

Investigating creep and the stress-rupture strength of iron at low temperatures. Fiz. met. i metalloved. 13 no.6:912-919 Je '62. (MIRA 15:7)

(Iron--Testing)
(Metals at low temperatures)

S/129/63/000/002/004/014
E193/E383

AUTHORS: Moroz, L.S., Khesin, Yu.D. and Belova, O.S.

TITLE: Structure and mechanical properties of low-alloy titanium alloys

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no. 2, 1963, 17 - 23

TEXT: The object of the present investigation was to determine the cause of deterioration in strength and plasticity suffered by titanium alloys of a composition near to that of the α-phase when they are slowly cooled from the β range. The experimental materials included titanium iodide, technical-purity titanium and Ti - 4% Al alloys, containing 0.55 - 1.62% V, 0.64 - 1.36% Mo, 0.66 - 1.27% Mn or 0.71% Fe. The effect of the following treatments was studied: 1) annealing at 800 °C for 2 hours; 2) water-quenching from 1 250 °C; 3) furnace-cooling from 1 250 °C. The first series of tests comprised determination of the mechanical properties. Typical results for pure and alloyed titanium are given below.

Card 1/4

Structure and ....

S/129/63/000/002/004/014
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Alloy	Heat treatment	σ_b	$\sigma_{0.2}$	δ	ψ	a_k
Titanium iodide	1	31.0	22.4	60.5	82.6	30.2
	2	33.0	23.7	44.6	80.9	25.1
	3	31.3	19.9	58.9	83.0	26.1
Ti - 4% Al - 0.71% Fe	1	74.2	69.4	16.1	46.0	8.2
	2	81.6	73.9	16.4	43.4	9.5
	3	64.6	59.0	8.9	25.3	5.5

Key: σ_b = UTS, kg/mm^2; $\sigma_{0.2}$ = 0.2% proof stress; δ = elongation, %; ψ = reduction in area, %; a_k = impact strength, kgm/cm^2.

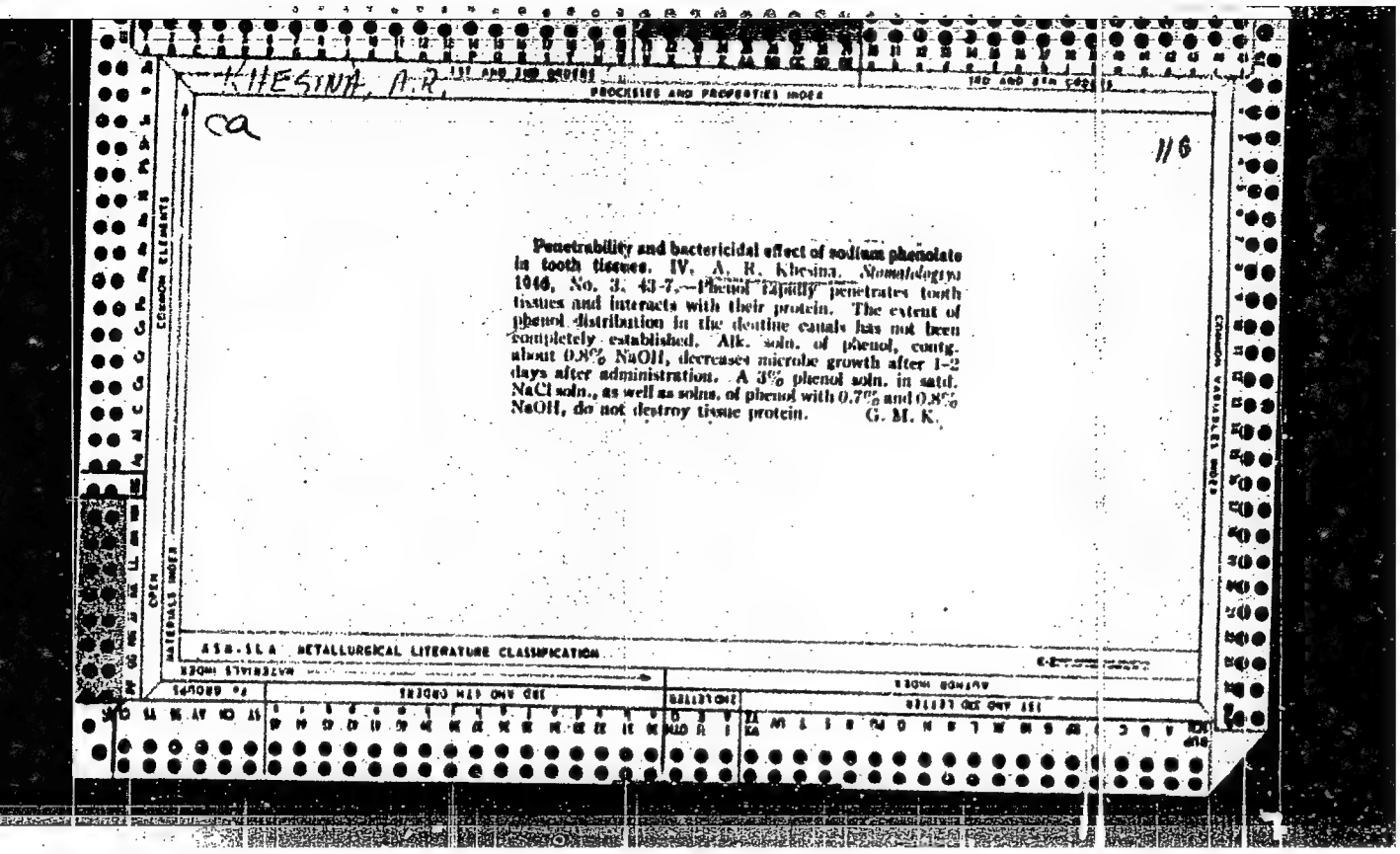
Card 2/4

Structure and ....

To determine the cause of marked differences between the effect of slow cooling on the properties of pure and alloyed Ti, the microstructure of specimens subjected to various heat-treatments was studied, the composition of the second phase found in slowly-cooled alloys was determined and its effect on the mode of plastic deformation was studied by microscopic examination of test pieces extended to various degrees of deformation and by following the changes taking place on the surface of preliminarily polished tensile test pieces during the actual tensile test. Conclusions: 1) decreasing the rate at which Ti alloys, containing small additions of the β-phase stabilizing elements, are cooled from the β range brings about a change in the structure of the alloy grains and a decrease in the mechanical properties. 2) The structural change consists of the appearance of plate-like precipitates of the second phase, formed above 800 °C, i.e. in the $\beta \rightarrow \alpha+\beta$ transformation range. 3) The presence of these precipitates leads to nonuniform deformation; as a result, microcracks are formed in the region of localized deformation in the early stages of plastic flow and this causes a decreases in strength and plasticity of the alloy.

Card 3/4

4) The harmful effect of the second-phase precipitates increases with increasing distance between them which, in turn, depends on the rate of cooling of the specimens from the β range. 5) The results of X-ray and spectrographic analysis show that the formation of plate-like precipitates is associated with redistribution of the β-phase stabilizing elements; the concentration of these elements in the precipitate is so high that the β-phase is retained in the precipitate at room temperature. The fact that formation of second-phase precipitates occurs only in slowly-cooled specimens indicates the diffusion character of the process.
There are 6 figures and 7 tables.



KHESINA, A. R.

ca

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Penetrability and bactericidal effect of sodium phenolate in tooth tissues. IV. A. R. Khesina. *Stomatologiya* 1946, No. 3, 43-7.—Phenol rapidly penetrates tooth tissues and interacts with their protein. The extent of phenol distribution in the dentine canals has not been completely established. Alk. soln. of phenol, contg. about 0.8% NaOH, decreases microbe growth after 1-2 days after administration. A 3% phenol soln. in satd. NaCl soln., as well as solns. of phenol with 0.7% and 0.8% NaOH, do not destroy tissue protein. G. M. K.

KHESINA, A.R.

36460. KHESINA, A. R. I SEREBRYAKOVA, V. M.
Profilakticheskaya Flyuorizatsiya Po Lukomskomu V Gal'Vanicheskom Tsekhe.
Stomatologiya, 1949, No. 4, S. 28-29.

SO: Letopis' Zhurnal'nykh Statey, Vol. 49, Moskva, 1949

SHABAD, L.M.; KHESINA, A.Ya.

Spectral-luminescent determination of 3,4-benzopyrene in high-purity industrial paraffins. Zav. lab. 31 no.11: 1345-1347 '65. (MIRA 19:1)

1. Institut eksperimental'noy i klinicheskoy onkologii AMN SSSR.

KHESINA, A.Ya.

Spectroscopy of certain pyrene derivatives in frozen solutions.
Izv.AN SSSR.Ser.fiz. 24 no.5:623-626 My '60.
(MIRA 13:5)

1. Gosudarstvennyy pedagogicheskiy institut im. V.I.Lenina.
(Pyrene--Spectra)

KHESINA, A.Ye.

Emission and absorption spectra of forzen crystalline solutions of certain pyrene derivatives. Opt.i spektr. 10 no.5:607-616 My '61. (MIRA 14:8)

(Pyrene—Spectra)

L 19470-63 EWA(b)/EWP(j)/EPF(c)/EWT(l)/EWT(m)/BDS AFFTC/ASD/IJP(c)/SSD

ACCESSION NR: AT3002193 Pa-4/Pc-4/Pr-4 RM/WW/MAY S/2941/63/001/000/0043/0051

AUTHOR: Khesina, A. Ya.

TITLE: Fluorescence spectra of n-paraffin solutions of pyrenes

SOURCE: Optika i spektroskopiya; sbornik statey. v. 1: Lyuminestsentsiya. Moscow, Izd-vo AN SSSR, 1963, 43-51

TOPIC TAGS: pyrene, spectra, fluorescence, n-paraffin

ABSTRACT: An experimental method was developed to obtain the fluorescence spectra of n-paraffin solutions of some pyrene derivatives in a temperature range -196 to 0C. The purpose was to determine the effect of temperature on the quasi-line fluorescence spectra of frozen crystalline solutions of some pyrenes, at intervals of 77K. The pyrenes used were: 3,4-napthto-6,7-benzopyrene in n-hexane; 3-methyl-4,5-ethylene-3,4,6,7-dibenzopyrene in n-octane; 3,4,5,6,7-tribenzopyrene in n-octane. It is shown that at the melting point the spectra blur into a wide band which remains the same up to room temperature. At 77K the spectra of the complex pyrenes show a quasi-linear form. "The author expresses his gratitude

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L 19170-63

ACCESSION NR: AT3002193

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to E. V. Shpol'skiy, B. A. Arbuzov and T. N. Bolotnikova." Orig. art. has: 5 figures, 3 formulas, and 1 table.

ASSOCIATION: none

SUBMITTED: 06Apr62 DATE ACQ: 19May63 ENCL: 00

SUB CODE: PH NO REF SOV: 010 OTHER: 008

Card 2/2

KHESINA, B.G.

3(7) PHASE I BOOK EXPLOITATION SOV/3031

Moscow. Tsentral'nyy institut prognozov

Voprosy dolgosrochnykh prognozov (Problems in Long-Range Forecasting) Moscow, Gidrometeoizdat (otd.) 1958. 104 p. (Series: Its: Trudy, vyp. 73) 1,100 copies printed.

Sponsoring Agency: USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby.

Ed.: (title page): V.M. Kurganskaya; Ed. (inside book): V.I. Tarukhanova; Tech. Ed.: I.M. Zarkh

PURPOSE: This issue of the Institute's Transactions is intended for meteorological and hydrographic specialists working in the field of long-range weather forecasting.

COVERAGE: This collection of articles deals with aspects of extended weather forecasting. Individual articles discuss: synoptic conditions of wind regimes most favorable to shipping along the Northern Sea Route [Soviet Arctic Seas]; synoptic conditions underlying a continuous ice cover in various parts

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Problems in Long-Range Forecasting SOV/3031

of the Sea of Azov; a method for compiling daily schematic 500-mb contour maps (AT_{500}) for 3 days by utilizing an equation of the conservation of vortex velocity and temperature regime; a method for the advance computation of the baric field for periods of 24, 48, and 72 hours; the determination of definite relationships for forecasting air temperature for a natural synoptic period. The results of actual tests in a series of investigations in extended forecasting are cited. References accompany each article.

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Problems in Long-Range Forecasting SOV/3031

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12-19-59

TSEPKANOVA, Ye.I.; KHESINA, B.G.

Estimating the preceding development of atmospheric processes and distribution of weather elements in the preparation of monthly weather forecasts. Trudy TSIP no.71:44-47 '58.
(MIRA 11:12)
(Weather forecasting)

KHESINA, B.G.

Investigating synoptic climatological relationships of atmospheric processes and temperature anomalies in September. Trudy TSIP no. 92:89-112 '60. (MIRA 14:2)
(Atmospheric temperature) (Weather forecasting)

KHESINA, B.G.

[redacted]

Forecasting reliability of basic atmospheric processes for September. TRUDY TSIP no.115:72-79 '62. (MIRA 16:6)

(Weather forecasting)

KHESINA, B.G.

Recurrence of December processes in September. TRUDY TSIP no.115:133-140 '62. (MIRA 16:6)

(Meteorology)

BORISOVA, L.G.; KHESINA, B.G.

Effect of solar activity on the formation of synoptic processes.
Trudy TSIP no.124:28-32 '63. (MIRA 16:8)
(Barents Sea--Cyclones) (Kara Sea--Cyclones) (Solar energy)

BORISOVA, L.G., kand. geograf. nauk; KHESINA, B.G.

Weather forecast for June, 1964, in the U.S.S.R. Meteor. i gidrol. no.5:69-72 My '64. (MIRA 17:6)

1. Tsentral'nyy institut prognozov.

BORISOVA, L.G., kand. geograf. nauk; KHRGIAN, B.G.

Weather forecasting for the U.S.S.R. in September 1964.
Meteor. i gidrol. no.8:61-64 Ag '64 (MIRA 17:8)

SHTABOVA, A.I.; KHESINA, B.G., mladshiy nauchnyy sotrudnik

Weather forecast for the U.S.S.R. in March 1965. Meteor. i gidrol. no.3:61-64 Mr '65. (MIRA 18:2)

1. TSentral'nyy institut prognozov. 2. Glavnyy inzh.-sinoptik TSentral'nogo instituta prognozov (for Shtabova).

BULINSKAYA, A.I., kand.fiz.-matem.nauk; KHESINA, B.G.

Weather forecast for the U.S.S.R. in September 1965. Meteor. i gidrol. no.9:insert p. 1-4 S '65. (MIRA 18:8)

1. TSentral'nyy institut prognozov.

KHESINA, Kh.Kh. (Luganskk)

Case of an atypical course of tuberculous meningitis. Vrach.delo no.8:145 Ag '62. (MIRA 15:11)

1. Kafedra fakul'tetskoy terapii (zav. - kand.med.nauk V.V. Osinskiy) Luganskogo meditsinskogo instituta.
(MENINGES—TUBERCULOSIS)

KHESINA, R. L., Cand Med Sci (diss) -- "The course of the acclimatization period among tuberculosis patients arriving on the southern shore of the Crimea from the central and southern regions of the USSR". Moscow, 1957. 22 pp (Min Health USSR, Min Health RSFSR, State Sci Res Inst of Spa Studies and Phys Therapy), 200 copies (KL, No 11, 1960, 139)

KHESINA, R.L.

Cutaneous thermoregulation tests in the acclimatization of patients with pulmonary tuberculosis to Crimean southern shore [with summary in French]. Probl.tub. 37 no.1:54-60 '59. (MIRA 12:2)

1. Iz Litovskogo tuberkuleznogo instituta (dir. Yu.L. Gamperis, zamestitel' direktora po nauchnoy chasti - prof. I.Ye. Kazakevich).
(TUBERCULOSIS, PULMONARY, physiol.
acclimatization to warm climate, thermo-regulation skin tests (Rus))
(CLIMATE,
acclimatization in pulm. tuberc. to warm climate, thermo-regulation skin tests (Rus))
(BODY TEMPERATURE,
thermo-regulation skin tests in warm acclimatization in pulm. tuberc. (Rus))

KHESINA, R.L.

Р. Л. Хесина защитила 27/I 1960 г. в Совете Московского государственного научно-исследовательского института курортологии и физиотерапии диссертацию на тему *«Течение периода акклиматизации у больных туберкулезом, приезжающих на Южный берег Крыма из центральных и южных районов СССР»*.

Разработаны показания и противопоказания для больных туберкулезом, приезжающих на Южный берег Крыма. На основании клинических и других методов исследований сердечно-сосудистой, нервной и других систем конкретизирован период акклиматизации этих больных с указанием ряда мероприятий, способствующих улучшению приспособительных реакций организма в этих условиях.

Candidate of Medical Sciences

Dissertations approved by the Higher Attestation Commission in January and February of 1961. Terap. arkh. no. 6: 117-121 '61

KHESINA-LUR'YE, M. Ye.

Surgical Clinic, Sanitation-Hygiene Faculty, First Moscow Branch of the Lenin Med. Inst., (-1944-)

"Chapman's method and its clinical significance for determination of staphylococci pathogenecity in the purulent wounds,"

Zhur. Mikrobiol., Epidemiol., i Immunobiol., No. 6, 1944.

BEREZOV, T.T.; KHESMAN, V.M.

Decarboxylation of glutamic acid in malignant tumors. Trudy Un. druzh. nar. 7. Vop. med. no.1:30-38 '64. (MIRA 18:9)

1. Kafedra biokhimii Universiteta Druzhby Narodov imeni Patrisa Lumumby, Moskva.

BEREZOV, T.T.; KHESMAN, V.M.

Effect of pyridoxal-5-phosphate and DL-penicillamine on the decarboxylation of glutamic acid in homogenates of a rat rhabdomyoblastoma. Trudy Un. druzh. nar. 7. Vop. med. no.1:39-43 '64. (MIRA 18:9)

1. Kafedra biokhimii Universiteta Druzhby Narodov imeni Patrisa Lumumby, Moskva.

KHESS,M., Cand Geog Sci —(diss)"Microclimate of the mountain and flatland terrain in connection with the distribution of the snow cover." L., Leh, 1959. 16 pp (Len Order of Lenin State U im A.A. Zhdanov), 150 copies (KL,32-59, 102)

KHESS, M.

Characteristics of temperature conditions in the Fedchenko Glacier region. Vest.LGU 14 no.18:103-113 '59.
(MIRA 12:8)
(Fedchenko Glacier region--Climate)

KHESSIN, N.

Stal'nye puti vtoroi piatiletki. [The steel path of the second five-year plan]. Moskva, Gostransizdat, 1932. 54p.

Contents,- General direction of the new railraod lines of the second five-year plan and the general character of their distribution by governments and regions. - The main lines of reconstruction.- Electrification of separate sections of railroad lines.

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

TSAGOLOV, N.A., prof., red.; KHESSIN, N.V., dotsent, red.; Prinimali uchastiye: SOLOMKOV, M.V., dotsent; CHERKOVETS, V.N., kand.ekon. nauk; VOLKOV, F.M., kand.ekon.nauk; VOZNESENSKIY, L.A., nauchnyy sotrudnik, GORDEYEVA, L.N., red.; YERMAKOV, M.S., tekhn.red.

[Problems of political economy] Voprosy politicheskoi ekonomii. Pod red. N.A.TSagolova i N.V.Khessina. Moskva, 1960. 278 p. (MIRA 13:4)

1. Moscow. Universitet.
(Economics)

KHESTANOV, G.T., podpolkovnik meditsinskoy sluzhby; MAL'TSEV, A.I., podpolkovnik meditsinskoy sluzhby; CHERNOV, I.G., podpolkovnik meditsinskoy sluzhby

Compound treatment of chronic gastritis at the Novye Senzhary Sanatorium. Voen.-med. zhur. no.6:78 Je '61. (MIRA 14:8)
(STOMACH—INFLAMMATION)
(NOVYE SENZHARY—MINERAL WATERS)

GAL'PERIN, F.M.; DEMIN, V.F.; SMIRNOV, A.A.; KHESTANOV, R.Kh.

Nuclear magnetic resonance in nickel. Izv. AN SSSR. Ser. fiz. 27 no.12:1458-1459 D '63. (MIRA 17:1)

MURAV'YEV, N.V.; KHESTANOVA, L.I.; SHAPOSHNIKOVA, V.V.

Method for analysing accidents in rural areas. Zdrav. Ros. Feder. 4 no.12:11-14 D '60. (MIRA 13:12)

1. Iz Respublikanskoy bol'nitsy Severo-Osetinskoy ASSR (glavnyy vrach.S.S.Khanayev).
(KIROV DISTRICT (OSSETIA)—ACCIDENTS)

MURAV'YEV, N.V.; KHESTANOVA, L.I. (Ordzhonikidze)

Efforts of the North Ossetian Republic Hospital to improve the qualifications of medical workers of the rural area. Zdrav.Ros. Feder. 7 no.3:32-35 Mr '63. (MIRA 16:3)
(OSSETIA, NORTH--PUBLIC HEALTH)
(OSSETIA, NORTH--MEDICINE--STUDY AND TEACHING)

KHETAGURI, I.

Relying upon the creative initiative of the masses. Sov. profsoiuzy 16 no.22:19-22 N '60. (MIRA 14:1)

1. Sekretar' Gruzinskogo respublikanskogo soveta profsoyuzov.
(Georgia--Socialist competition)
(Georgia--Trade unions)

KHETAGUROV, A.D.

Reserve alkalinity and true urinary acidity in acute myocardial infarction caused by thrombosis of the coronary artery. Terap.arkh. 33 no.10:33-38 '61. (MIRA 15:1)

1. Iz kliniki fakul'tetskoy terapii pediatricheskogo fakul'teta (dir. - prof. M.I. Zolotova-Kostomarova) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.
(HEART---INFARCTION) (CORONARY VESSELS---DISEASES)
(ACID BASE EQUILIBRIUM)

BEREZOVSKAYA, Ye. K.; KHETAGUROV, A. D.

Pulmonary adenomatosis. Terap. arkh. 34 no.5:96-98 '62.
(MIRA 15:6)

1. Iz kafedry fakul'tetskoy terapii (zav. - prof. M. I. Zolotova-Kostomarova) pediatricheskogo fakul'teta II Moskovskogo meditsinskogo instituta imeni N. I. Pirogova i patologoanatomicheskogo otdeleniya 1-y gorodskoy klinicheskoy bol'nitsy (glavnyy vrach - zasluzhennyy vrach RSFSR L. D. Chernyshev)

(LUNGS—TUMORS)

KHETAGUROV, A.D.

Changes in the calcium and inorganic phosphorus of the blood in patients with acute myocardial infarct developing after coronary thrombosis. Terap. arkh. 35 no.5:15-20 My'63 (MIRA 16:12)

1. Iz kliniki fakul'tetskoy terapii (dir. - prof. M.I.Zolotova-Kostomarova) pediatricheskogo fakul'teta II Moskovskogo meditsinskogo instituta.

KHETAGUROV, A.I.

KHETAGUROV, A.I.; GUDZHEDZHIANI, B.I.

Work practices using hydraulic filling in Tkibuli Coal Trust mines. Trudy Inst. met. i gor. dela AN Gruz. SSR 2:197-215 '49.(MIRA 11:1)
(Tkibuli--Hydraulic mining)

KHETAGUROV, G., general-polkovnik

Let's teach our sergeants and rely upon them. Komm.Vooruzh. Sil 2 no.12:21-28 Je '62. (MIRA 15:8)

1. Komanduyushchiy Severnoy gruppoy voysk.
(Russia--Army--Noncommissioned officers)

KHETAGUROV, G.A., inzh.

Some shortcomings of a good machine. Transp.stroi. 14 no.12:56-57 D '64. (MIRA 19:1)

KHETAGUROV, G.D.; SHESTAKOV, V.A.

Utilization of large scale ore mining systems and ways of improving them. Vest.AN Kazakh.SSR 11 no.7:27-38 Jl '54. (MLRA 7:11)
(Mining engineering)

KHETAGUROV, G.D.; DOBROSERDOV, Ye.I.; YERGALIYEV, A.Ye.; VOLKOV, F.I.

Practice of applying high productive systems of mining in certain mines. Vest. AN Kazakh. SSR 11 no.9:80-91 S '54.
(Mining engineering) (MLRA 8:2)

KHETAGUROV, G.D.

Mining systems for thick ore deposits of Dzhezkazgan. Trudy Alt. GMMII no.2:91-99 '55. (MLRA 10:1)
(Dzhezkazgan--Mines and mineral deposits) (Mining engineering)

KHETAGUROV, G. D.

137-58-4-6401

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 10 (USSR)

AUTHORS: Khetagurov, G. D., Krutikov, P. M.

TITLE: The Effect of the Working Out of a Vein on Flotation Criteria (Vliyaniye razubozhivaniya na pokazateli flotatsii)

PERIODICAL: Sb. tr. Vses. n.-i. in-ta tsvetn. met., 1956, Nr 1, pp 30-37

ABSTRACT: Laboratory tests were employed to determine the effect of the working out (W) of a deposit on the flotation indices of sulfide ore at one of the fields of a polymetallic source. Pb-Zn-Cu ore, the initial content of which had been 5 percent Pb, 10 percent Zn, and 0.6 percent Cu, was becoming diluted with gangue. The degree of W varied from 0 to 90 percent. The final mixture contained 0.5 percent Pb, 1 percent Zn, and 0.06 percent Cu. It was established that W of the initial ore to contents of about 1.5 percent Pb, 3 percent Zn, and 0.15 percent Cu is accompanied by only a negligible diminution in the extraction of Pb and Zn in the respective froth products. Further W of the ore results in a sharper increase in losses of Pb and Zn in the final tailings. Extraction of Cu undergoes a constant diminution as W increases, and the rate of this decline is considerably more rapid than that

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137-58-4-6401

The Effect of the Working Out of a Vein on Flotation Criteria

in the extraction of Pb and Zn. However, the low Cu content of the initial ore should be taken into consideration. Selective flotation of Pb and Zn remains unchanged for all mixtures and is not dependent upon W.

A. Sh

1. Ores--Processes 2. Minerals--Extraction 3. Flotation--Applications

Card 2/2

KHETAGUROV, G.D.; SHESTAKOV, V.A.; BALABOLKIN, A.N.

Basic indexes of the effectiveness of high yield mining systems in certain complex metal ore mines. Trudy Alt. GMNII AN Kazakh. SSR no.3:110-121 '56. (MLRA 10:2)

(Altai Mountains--Mines and mineral resources)

KHETAGUROV, G.D.

Problems of improving the technology of extracting ore by systems of mass breaking-down. Vest.AN Kazakh.SSR 12 no.2: 20-30 F '56. (Mining engineering) (MIRA 9:6)

Khetagurov, G.D.

KHETAGUROV, G.D.; SHESTAKOV, V.A.

Determining the maximum ore yield from a block in block caving systems. Trudy Alt. GMNII AN Kazakh. SSR 4:52-68 '57. (MIRA 11:1)
(Mining engineering)

KHETAGUROV, G.D.

Classification of mining systems. Trudy Alt.GMNII AN Kazakh. SSR 6:139-146 '58. (MIRA 12:1)
(Mining engineering)

KHETAGUROV, G. D.

Evaluating the system of induced level caving. Izv.AN Uz. SSR.tekh.nauk no.3:71-83 '61. (MIRA 14:6)

1. Gornyy otdel Akademii nauk UzSSR.
(Mining engineering)

KHETAGUROV, G.D.

Comparative evaluation of mining systems with induced sublevel caving. Trudy Alt. GMNII AN Kazakh. SSR 9:104-118 '60.
(MIRA 14:6)

1. Altayskiy gornometallurgicheskiy nauchno-issledovatel'skiy institut AN Kazakhskoy SSR.
(Mining engineering)

KHETAGUROV, G.D.

Improving the system of block ore caving. Izv. AN Uz.SSR. Ser.tekh.nauk 6 no.2:65-71 '62. (MIRA 15:7)

1. Gornyy otdel AN UzSSR.
(Mining engineering)

TROKSKAYA, Z.I.; TEMKIN, Z.Ye.; KHETAGUROV, G.D., kand. tekhn. nauk

Quality of nonferrous metal ores and the profitableness of their production; discussion of the article by B.F. Novozhilov. Gor. zhur. no.11:7-11 N '63. (MIRA 17:6)

1. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy tsvetnoy metallurgii, Moskva (for Trokskaya, Temkin).
2. Srednеaziatskiy filial Gosudarstvennogo nauchno-issledovatel'skogo instituta tsvetnykh metallov, Almalyk (for Khetagurov).

KHETAGUROV, G.D.

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"Vestnik Venerologii i Dermatologii" No 4

From the Leningrad Dermatological and Venerological Institute, Director, S. E. Gorbovitskiy. Some reference to work done by Gorman, Ehrlich, Eltze, and others. In cases of spirochetosis the usual method of therapy and the droplet method of treatment give results similar to the compact method of Khetagurov. For this reason it is expedient to begin ordinary therapy of syphilis with a large dose (0.6).

17T2

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Forms in which silver is found in Kholstinskiy deposit ores (Central Caucasus). Izv.vys. ucheb. zav.; tsvet. met. no.3:23-26 '58. (MIRA 11:11)

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(Mizur region--Ore deposits) (Silver ores)

AUTHOR: Khetagurov, G.V. SOV/149-58-4-16/26

TITLE: Mineralogy of the Products of Smelting Gold-bearing Ores with Certain Concentrates of East Siberian Origin (Mineralogiya produktov plavki zolotosoderzhashchikh rud i kontsentratov nekotorykh mestorozhdeniy vostochnoy Sibiri)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, 1958, Nr 4, pp 119-121 (USSR)

ABSTRACT: Microscopic examination of slags produced in the course of the investigation on matte smelting of rich, gold-bearing concentrates (described on p.109-118 of the present issue of this journal) revealed numerous matte inclusions consisting of various sulphides, and containing also metallic copper and magnetite. A detailed list of all the identified minerals and their characteristics is given below:

Bornite (Cu_5FeS_4) can be distinguished on freshly polished micro-sections by its pink colour and by pale pink and bluish films formed rapidly on its surface. It gives a

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positive reaction when etched with HNO_3, $FeCl_3$ or KCN, is moderately hard and isotropic. It is usually the main constituent of the matte inclusions and forms often a eutectic with the other sulphides. It contains sometimes metallic copper and magnetite (Fig.2).
Chalcopyrite ($CuFeS_2$) is characterised by yellow colour, high reflectivity, positive reaction with HNO_3 and its weak effect on polarised light.
Metallic copper is easily distinguished by its soft pink colour, high reflectivity, low hardness and positive reaction with all the standard etching reagents except HCl.
Chalcosine (Cu_2S) examined by reflected light appears pale blue. It can be etched with HNO_3 and $FeCl_3$ and is present in its rhombic modification indicated by its marked anisotropy.
Cubanite ($CuFe_2S_3$) is present in the form of minute, allotriomorphic grains characterised by yellowish pink colour, high degree of anisotropy and negative reaction

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with HCl, HNO_3 and $FeCl_3$.

Magnetite (Fe_3O_4) is present in the form of flat particles, no larger than 0.04 - 0.05 mm and is usually found at the matte inclusion/slag interface, or in the top slag layers. Sometimes magnetite can also be present in the interior of the matte inclusions (Fig.2).

Examination of transparent specimens of slag showed that it consisted almost entirely of amorphous silicate glass with a small number of pyroxene (Fig.3), chalcopyrite, arsenopyrite and other sulphide inclusions. The refractive index of the slag was found to be 1.653 which indicated its acid character. The slag contained also some monticellite ($CaMgSiO_4$) inclusions. No metallic gold could be observed under